

Oral Health Status, Hygiene Habits and Treatment Needs among Elderly Brazilians: A Cross-sectional Study

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ABSTRACT

Purpose: Oral health status seems to play an important role in the quality of life of the elderly, the aim of this study was to verify oral hygiene habits, oral health status and treatment needs of a sample of elderly Brazilians in the city of São Paulo.

Materials and methods: A convenience sample of 167 individuals underwent interviews and clinical examinations.

Results: A total of 107 patients (64.1%) reported brushing their teeth 3 or more times per day, 42.5% floss their teeth, and 24.0% uses mouthwash. The average time since the patients' last visit to a dentist was 2.2 years (± 4.6). Only 24.6% of the teeth were periodontally healthy, and the most prevalent pathological condition was gingival recession (46.1%). Eighty-two percent use some type of dental prosthesis. A total of 35.3% of the sample required periodontal treatment, 32.9% needed direct restorations, 39.5% removable partial dentures and 23.4% complete dentures. Positive associations were found between the current condition of oral health and flossing ($p = 0.004$) and between the current condition and the use of interdental brushing ($p = 0.009$), and an inverse association with the time elapsed since the last dental appointment ($p = 0.016$).

Conclusion: The oral health status in this sample was better than observed in previous Brazilian surveys, but dental treatment needs remain high, mainly regarding prosthetic needs.

Keywords: Geriatrics, Oral health, Treatment needs, Public health.

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INTRODUCTION

The continuous growth of elderly populations is evident¹ around the world, and is widely attributed to the longer life expectancy today. Therefore, the number of people living to an old age is increasing. The most important challenge today is to improve the quality of life of the elderly, and oral health seems to play an important role in improving their general well-being.² Oral health is closely related to several aspects of patients' general health and well-being.³⁻⁷ As an example, patients with poor oral health are more predisposed to present aspiration pneumonia than those who

enjoy good oral health, since oral bacteria can be aspirated during sleep and reach the lungs.⁸

An international study⁹ in the USA, Poland, Germany and New Zealand concluded that the current cohort of elderly people presents a better dental status than earlier ones, but its oral health conditions are still far from the ideal. Edentulism among 65 to 74-year-old ranged from 23% in USA (Baltimore) to 42% in Poland (Lodz), 29% in Germany (Erfurt) and 50% in New Zealand. In developing countries, the growth of elderly populations occurs within a context of incomplete economic and social development, which results in more difficult access to public health services, including oral health services.¹⁰

Elderly Brazilian populations, for instance, are still characterized by poor oral health, high indices of edentulism and reduced numbers of teeth,¹¹ presenting many unmet oral health needs. In a national survey in 2003,¹² 66.5% of an elderly Brazilian population wore upper dentures and 30.9% wore lower dentures. It is estimated that only 9.6% of individuals aged 65 to 74 years in Brazil present functional dentition.¹³ In view of the rapid development of emerging economies, it is important to gain a more comprehensive understanding of their populations' oral health needs, helping to plan public health strategies for improving the quality of life of the elderly.

This cross-sectional study examined the self-reported oral hygiene habits, oral health status and dental treatment needs of patients attending a healthcare center for the elderly in São Paulo, Brazil's largest city, in the first semester of 2009. Brazil is a developing country that is still plagued by critical problems related to health public services. However, the country is seeking to use some of the revenue from its economic development to improve its social parameters, including its oral health system. We therefore hypothesize that self-reported oral hygiene habits, oral health status and dental treatment are better today than they were in previous Brazilian surveys of elderly people.^{11,14,15}

MATERIALS AND METHODS

Participants

The convenience sample was composed of individuals attending a public healthcare center for the elderly in a large

district (Pinheiros) of São Paulo, Brazil, seeking general health care during the period of January to June 2009. No institutionalized people attended this healthcare center.

Considering that the target population of the district where the healthcare center is located consists of about 24,000 elderly individuals, the above-mentioned sample represents 0.68% of the target population and a sample power score of 0.77, considering a statistical sampling error of 7.8% (Minitab power and sample size tool, Minitab Inc, State College, PA, USA). A potential source of bias that was considered is the use of a convenience sample, which affects the generalization of the findings.

The only inclusion criterion was the patients to be 65 years old or older, and the exclusion criterion was the refusal to answer the questionnaire about general health. All ethical aspects regarding human participant were observed and every participant signed an informed consent form before participating in this study.

Data Collection

All the patients were interviewed and clinically examined. During the initial interview they answered a questionnaire about their oral health, including the frequency they visited dentists, their oral hygiene habits and a declared reason for teeth loss (when applicable). Clinical examinations were performed in loco by one of the researchers, attempting to note gingivitis or periodontitis, the presence of abnormal conditions of the tissues, dental and prosthetic status and treatment needs.

Data Analysis

The collected data were compiled and subjected to descriptive statistics. The two-ratio equality test was applied to analyze the distribution of qualitative variables, while Mann-Whitney, Chi-square and Kruskal-Wallis tests were used to check for possible associations among variables. An alpha level of 0.05 was adopted for all the tests applied in this study.

RESULTS

A total of 167 elderly patients were included in this study, and the mean age of the sample was 72.1 (± 6.6) years, ranging from 66 to 91 years old. Only 32 individuals were males, representing 19.2% of the sample.

With regard to oral hygiene habits, only 107 patients (64.1%) brushed their teeth three or more times a day. Only 16.2% reported using a tongue cleaner, 14.4% reported using interdental toothbrushes, 42.5% reported flossing, and 24.0% reported using mouthwash. The average time since the patients' last visit to a dentist was 2.2 years (± 4.6).

The clinical examinations indicated that only 44 patients (24.6%) were periodontally healthy, and that the most prevalent pathological condition was gingival recession (46.1%), while the least prevalent was tooth mobility (5.4%) preceded by the presence of calculus (13.8%) and gingival bleeding (16.8%). The main declared reason for teeth loss was caries (73.1%), followed by periodontal disease (26.9%). Thirty patients (17.9%) were edentulous in both arches, while 26.3% ($n = 44$) were devoid of upper teeth and only one presented edentulism solely in the lower arch.

Eighty-two percent of the examined patients use some type of dental prosthesis. Table 1 shows the distribution of the prostheses over the arches.

As for dental treatment needs, 35.3% of the sample required periodontal treatment, 32.9% required direct restorations, and 4.2% needed dental extraction. Furthermore, 39.5% needed removable partial dentures, 23.4% required complete dentures, 16.2% needed single crowns and 5.4% needed fixed bridges. Only 2.4% of the sample required rebasing and/or repair of removable dentures.

An association was found between the current oral health status and flossing ($p = 0.004$, Chi-square test). The majority (67.9%) of the patients showing gingival bleeding did not habitually floss their teeth, while 70.7% of the patients with healthy periodontal tissues flossed regularly.

Another association was found between interdental brushing and the current oral health status ($p = 0.009$, Chi-square test). Most of the patients (94.9%) with decayed teeth did not use an interdental brush.

An association was also found ($p = 0.016$, Kruskal-Wallis) between the time elapsed since the last dental appointment and the current oral health status. More frequent visits to the dentist were positively correlated with fewer and milder oral health problems (Table 2). Similarly, the time elapsed since the last dental appointment and the patient's treatment needs was also positively correlated ($p < 0.001$, Kruskal-Wallis), as indicated in Table 3. People requiring tooth extraction had allowed more time to elapse since their last dental appointment.

DISCUSSION

The hypothesis of this study, that this research should present better findings than those found in previous Brazilian

Table 1: Type of dental prosthesis distribution over the arches

	Overdenture	Removable partial denture	Complete denture	Fixed bridge and removable partial denture
Lower arch	3	51	25	0
Upper arch	1	23	72	1
Total	2.2%	42.0%	55.1%	0.5%

Table 2: Time since last dental appointment for each current status of oral health

Time since last dental appointment	Oral health status						
	Calculus	Cavity	Mobility	Restored	Gingival recession	Gingival bleeding	Healthy
Mean	2.1	2.8	4.0	1.1	1.4	1.9	0.6
SD	2.9	6.6	5.0	2.4	2.7	3.2	0.8
N	23	39	9	117	77	28	41
p-value	0.016*						

The asterisk (*) indicates statistically significant difference (Kruskal-Wallis test)

Table 3: Time since last dental appointment for each treatment need

Time since last dental appointment	Treatment needs							
	Repair	Restorations	Teeth extraction	Periodontal treatment	Multiple fixed bridges	Single fixed bridge	Removable partial denture	Complete denture
Mean	2.7	1.1	8.4	1.8	0.2	1.5	1.8	6.0
SD	2.1	1.7	14.3	3.2	0.3	3.4	3.0	8.0
N	4	55	7	59	9	27	65	39
p-value	<0.001*							

The asterisk (*) indicates statistically significant difference (Kruskal-Wallis test)

surveys among elderly people, was confirmed. In other words, the findings of this study revealed lower averages of total edentulism (17.9%) than earlier systematic surveys of elderly Brazilians, which used a similar methodology and reported edentulism rates ranging from 47 to 84%.^{14,15} Earlier surveys also found fewer patients who reported brushing their teeth 3 times a day (21.3%), flossing (7.3%) and mouthwashing (4%) when compared to the findings of Marchini et al 2006.¹¹ However, some of those findings should be compared carefully since the aforementioned study¹¹ involved institutionalized elderly, while the present study involved a conventional sample of independent elderly living in Brazil's largest city, where the population has easier access to information and to public health services.

Nevertheless, this improvement is important, since oral health status was found to be positively correlated with dental flossing and with interdental brushing. Another finding that supports the validity of the hypothesis is the better periodontal conditions found in this study than in previous ones.¹¹ In the present study, the most prevalent pathological condition was gingival recession (46.1%), and only 13.8% of the participants presented calculus. Previous reports reported the presence of calculus as the most prevalent periodontal condition (14-50%),¹⁴ reaching up to 73.3% of periodontal disease.¹¹

Poor oral health with teeth loss also leads to reduced masticatory efficiency, even when the lost teeth are replaced by dentures.⁴ The reduction of masticatory efficiency should cause difficulties in chewing and may affect the patient's nutritional status.⁶ Pain is another symptom that maybe related with poor oral health, which also affects the quality

of life.⁵ However, changes that occur during aging may reduce sensitivity to oral pain, and older adults may be unaware of oral disease until the disease has advanced and extensive services are required to manage it.¹⁶ Furthermore, the oral health of elderly people plays an important role in the longevity of these patients. Respiratory diseases among the elderly can be prevented or limited with good oral hygiene,⁸ and other studies have found that partial tooth loss and edentulism have a potential role in mortality due to cardiovascular disease.^{3,7} Dental care for the elderly requires frequent follow-ups, since systemic and local factors may be more strongly correlated at this age.¹⁰

In this study, the time elapsed since the last appointment was correlated with the current conditions and treatment needs, since the shorter the time elapsed since the last appointment the fewer the problems observed. A possible explanation for the variance in the time elapsed, since last dental appointment is that some patients do not receive adequate explanations about the importance of periodical visits to the dentist in maintaining their oral health and preventing possible problems. Therefore, after concluding a dental treatment, an elderly patient may consider he has been 'healed' and may not make a follow-up visit until he develops pain and/or discomfort. The absence of dental assistance after dentures delivery is one of the factors that explain the widespread need for repair or substitution of dentures, as well as the high prevalence of lesions associated to them.¹⁵ The average time elapsed since the last dental appointment was 2.2 years. However, this period varied considerably, since the standard deviation (4.6) was higher than this average, with the maximum time elapsed since the last dental appointment reported to be 40 years.

The study has some limitations with regard to the sampling methodology, which hinders the overall reliability of the findings, since oral health status and dental treatment need vary according to the sample, the country and even to regions within the same country.¹⁴ Nevertheless, our findings suggest that although the oral status of elderly Brazilians is still far from ideal, it is gradually improving. Professionals and public health authorities should emphasize the importance of daily hygiene and follow-up visits to further improve the population's oral health status.

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